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# Northeast Area Monitoring and Assessment Program/Northeast Fisheries Science Center Survey Personnel Exchange 2009

Northeast Area Monitoring and Assessment Program

# NEAMAP / NEFSC Survey Personnel Exchange – Spring 2009

The program manager of the NEAMAP Near Shore Trawl Survey at the Virginia Institute of Marine Science (VIMS) participated in Leg III of the Northeast Fisheries Science Center (NEFSC) Bottom Trawl Survey in the spring of 2009. This cruise began on 30 March 2009 and concluded on 10 April 2009; approximately 80 sites were sampled during this time covering the offshore waters south of Cape Cod, the inshore waters east of the Cape, Cape Cod Bay, and the northwestern portion of Georges Bank. The personnel exchange was intended to foster communication and coordination between the NEAMAP and NEFSC surveys. Specifically, this cruise provided the opportunity for the NEAMAP representative and NEFSC field staff to discuss the similarities and differences in their sampling gears, fishing operations, catch processing protocols, and biological sampling and for the NEAMAP manager to experience the NEFSC Survey. Data collection systems were also discussed and evaluated, and the NEAMAP manager had the opportunity to become familiar with the data collection and data auditing aspects of the Fisheries Scientific Collection System (FSCS).

With respect to the survey gear, both the NEFSC and NEAMAP chose a 400x12cm three-bridle, four-seam bottom trawl as the primary sampling tool for their trawl surveys. While initially the nets used by these groups were nearly identical in design, discussions between the NEAMAP representative and the NEFSC chief scientist for this cruise revealed several differences. Specifically, the NEFSC has added a chafing mat to the codend, third top and bottom bellies (allowing a change in taper from 2B1P to 1B1P), and three floats between the upper jib (wing-end) and top bridle on each wing-end, while NEAMAP has begun dying their codend liners with black Rit-dye. Differences in webbing size and float construction may also exist; these issues are currently being investigated by NEFSC and VIMS personnel. The tow wires, trawl doors, and type of sweep used differ between the two operations. Following the cruise, the NEAMAP program manager and NEFSC chief scientist (both of whom play a role in gear procurement, modification, and certification for their respective groups) committed to maintaining more frequent communications regarding their survey gears, and several gear-related conversations have since occurred.

Observations of NEFSC fishing procedures during this cruise revealed similarities to and differences from those used by NEAMAP. Both surveys tow their gear along the bottom for 20 minutes with a target speed of 3.0 – 3.1 kts. The criteria used to mark the start of the tow differ, however. NEAMAP begins recording tow time when the brakes on the vessel's winches are set, while the NEFSC uses data provided by their headline height sensor to identify the beginning of a tow. Specifically, when headrope heights stabilize near the expected headrope value, the net is deemed to be on the bottom and the tow time begins. In reality, because of the shallow sampling depths of the NEAMAP Survey, the net is on the bottom when the winch breaks are set (verified by net monitoring gear), so tow time protocols are actually more similar than they first appear. Also, NEAMAP and the NEFSC differ on their criteria for determining the validity of truncated tows. Tows of at least 15 minutes are valid for the NEAMAP Survey, while tows must last at least 16 minutes to be considered acceptable by the NEFSC.

The NEAMAP representative and NEFSC chief scientist discussed the use of net geometry measurements to determine tow validity; NEAMAP implemented such a protocol beginning with its spring 2009 survey while the NEFSC is in the process of developing a similar set of criteria.

Both groups expressed interest in expanding their acceptable tow criteria beyond tow averages (e.g., average headline height, wingspread, doorspread, etc.) to include measures of within-tow variability in trawl geometry. This cruise also afforded the NEAMAP program manager the opportunity to work with a net monitoring system that differed from the one used by NEAMAP and to see how this system integrated with the FSCS software.

The manner in which catches are processed varies between the two surveys, and this personnel exchange afforded the NEAMAP program manager the opportunity to better understand the advantages and disadvantages of each. The NEFSC Bottom Trawl Survey uses a combination hopper/fish elevator/conveyor belt to sort the catch. NEAMAP catches are dumped onto the working deck and shoveled into a cull table for sorting. Some of the advantages of the NEFSC system are obvious: namely, most of the of the catch handling is automated which reduces the incidence of muscle strains, fatigue, etc., double handling of specimens is kept to a minimum, and it is possible to 'run' specimens of abundant species to the end of the conveyor and into baskets such that a large portion of the catch never needs to be touched by the scientists during the sorting process. Also, the placement of work positions along the conveyor line and the assignment of a limited number of species to each scientist for sorting is likely a more efficient mode of operation; the scientist only has to pick certain specimens off of the line, and the sorting baskets for each of those specimens are well within reach of that scientist. It did take the NEAMAP manager some time to become acclimated to sorting under this system, however. He found that he was more prone to make errors is species identification as he was hurrying to keep up with the fish that were passing by on the conveyor. Although it is certainly possible and acceptable to stop the conveyor when necessary, he felt that his species identification is more accurate when fish are sitting in front of him in a cull table. Again, this issue would likely be resolved as more experience is gained working with a conveyor system.

With respect to the separation of a given species into size-classes during the sorting process, both NEAMAP and the NEFSC use a similar protocol. For both surveys, the presence of size-classes (and the approximate range of each) for a given species in a given tow is determined by the eye of the watch chief. Also, these size-classes are not fixed ranges. In other words, the ranges of small, medium, and large for a species caught in one tow may differ from those of the same species in another catch. Similarities and differences were observed in the manner in which data were collected from each catch. The actual information collected is virtually the same for both surveys. Both collect aggregate weight and individual length measurements at a minimum from each size-class of each species caught in each tow. Both also record additional information, including individual length, weight, eviscerated weight, sex, maturity stage, diet, and age, from species of management interest. The way in which specimens are selected for this latter type of processing differs between the two surveys, however. NEAMAP takes an approximately-random subsample from each size-class of each species of management interest by selecting from the whole sample of that species/size-class. The NEFSC, on the other hand, takes anywhere from one to a few specimens from pre-determined length bins within each of these species/size-groups. Also, the NEFSC removes, identifies, and records the stomach contents of each of these specimens at sea, while NEAMAP removes and preserves the stomach of each of these fishes and analysis occurs post-cruise at the shore-based VIMS laboratories. The advantages and disadvantages of these approaches to collecting diet data were identified in discussions between the NEAMAP representative and the NEFSC chief scientist during the

cruise, as well as between the NEAMAP program manager and the NEFSC Ecosystem Surveys Branch Chief following the cruise.

And finally, the cruise provided the NEAMAP program manager with the opportunity to use the NEFSC's FSCS system, and begin to evaluate the compatibility of this system with NEAMAP Survey operations. Some advantages of the FSCS over NEAMAP's current data collection system are: FSCS is Windows-driven, meaning that most of the current electronic measuring boards on the market can communicate with this software, the system guides the user through the data collection process so that even those new to the software (i.e., the NEAMAP representative) are able to navigate it with confidence after processing only a catch or two, FSCS provides alerts when additional information/biological samples are to be collected (eliminates the need for posted sample request sheets and/or a chief scientist with a good memory), and relatively strict acceptable data ranges for each variable mean that errors are often caught and corrected at the point at which the data are being collected. The post-tow data auditing program is user-friendly and allows for the identification and correction of most data-entry errors within minutes of the conclusion of data collection, an excellent feature of this system. Some modifications would be necessary to the program to suit the needs of the NEAMAP Survey, however. The most important of which include removing restrictions that limit the processing of a species from a given sampling site to a single workstation as well as those that prevent the concurrent entry of data from different sampling sites.

Overall, it is felt that this personnel exchange has been beneficial to NEAMAP Near Shore Trawl Survey, and hopefully to the NEFSC as well. This cruise gave the two groups the opportunity to exchange information and ideas on a wide range of issues, ranging from survey gear modifications to the type of plastic bag used to collect particular samples. Interactions between NEAMAP and the NEFSC have carried beyond the end of this trip. As noted above, field survey personnel from these groups are now in regular contact to share information regarding survey gear modifications, at-sea catch processing protocols, and a variety of other topics. These conversations have also led to the initiation of a dialogue between the ageing laboratories for each survey; efforts to standardize age sample processing and age assignment protocols are now underway. It is anticipated that exchanges between NEAMAP and the NEFSC will continue. In fact, NEFSC have indicated a desire to participate in the fall 2009 NEAMAP cruise, and the NEAMAP crew welcomes this opportunity.